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February 13, 2004

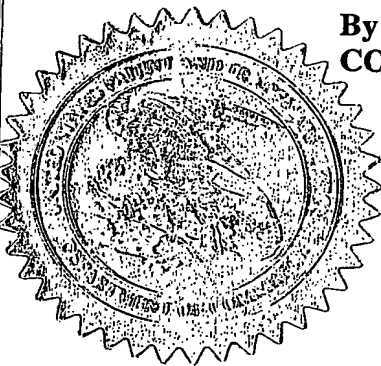
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APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A
FILING DATE.

APPLICATION NUMBER: 60/431,621

FILING DATE: December 06, 2002

RELATED PCT APPLICATION NUMBER: PCT/US03/38895

By Authority of the
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M. Tarver

M. TARVER
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. EV194865275US

INVENTOR(S)

Given Name (first and middle (if any))	Family Name or Surname	Residence (City and either State or Foreign Country)
John Walter	Englert	Carmel, Indiana

☐ Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (280 characters max)

TUNER HEAT REDUCTION IN STANDBY

CORRESPONDENCE ADDRESS

Direct all correspondence to:

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<input checked="" type="checkbox"/> Firm or Individual Name	JOSEPH S. TRIPOLI, THOMSON MULTIMEDIA LICENSING INC.				
Address	PATENT OPERATIONS.				
Address	P. O. BOX 5312				
City	PRINCETON	State	NJ	ZIP	08543-5312
Country	USA	Telephone	609-734-6834	Fax	609-734-6888

ENCLOSED APPLICATION PARTS (check all that apply)

<input checked="" type="checkbox"/> Specification Number of Pages	3	<input type="checkbox"/> CD(s), Number	
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets	1	<input type="checkbox"/> Other (specify)	
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76			

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)

- ☐ Applicant claims small entity status. See 37 CFR 1.27.
☐ A check or money order is enclosed to cover the filing fees

- ☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 07-0832
☐ Payment by credit card. Form PTO-2038 is attached.

FILING FEE
AMOUNT (\$)
160

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

- ☒ No.
☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,
SIGNATURE

Robert D. Shedd

Date 12/6/02

TYPED or PRINTED NAME Robert D. Shedd

REGISTRATION NO. 36,269
(if appropriate)

TELEPHONE 609 734-6828

Docket Number: PU020491

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$). 160

Complete If Known

Application Number
Filing Date
First Named Inventor John Walter Englert
Examiner Name
Group / Art Unit
Attorney Docket No. PU020491

METHOD OF PAYMENT (check one)

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit
Account
Number

07-0832

Deposit
Account
Name

THOMSON multimedia Licensing Inc.

- ☒ Charge Any Additional Fee Required
Under 37 CFR 1.16 and 1.17
☐ Applicant claims small entity status.
See 37 CFR 1.27

2. ☐ Payment Enclosed:

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FEE CALCULATION

1. BASIC FILING FEE

Large Fee Code	Entity Fee (\$)	Small Fee Code	Entity Fee (\$)	Fee Description
101	740	201	370	Utility filing fee
106	330	206	165	Design filing fee
107	510	207	255	Plant filing fee
108	740	208	370	Reissue filing fee
114	160	214	80	Provisional filing fee

Fee Paid

160

SUBTOTAL (1)

(\$ 160)

2. EXTRA CLAIM FEES

Total Claims -20 ** = 0 X = 0
Independent Claims -3 ** = 0 X = 0
Multiple Dependent X = 0

Large Fee Code	Entity Fee (\$)	Small Fee Code	Entity Fee (\$)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2)

(\$ 0)

**or number previously paid, if greater, For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Fee (\$)	Small Entity Fee Code	Fee (\$)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet.	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17 (q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
178	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3)

(\$ 0)

SUBMITTED BY

Name (Print/Type)	Robert D Shedd	Registration No. Attorney/Agent	36,269	Telephone	609-734-6828
Signature				Date	December 6, 2002

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Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Tuner Heat Reduction in Standby

Signal processing apparatus, such as the ATC-311 color television receiver chassis produced by Thomson of Indianapolis, Indiana, typically include signal processing circuitry that may be configured in the form of a module. An example of such a module is a module referred to herein as the DM2 that is also produced by Thomson. Such a module typically includes various components and may also include a tuner for selecting a particular signal or channel from a plurality of signals or channels received by the apparatus. A module such as the DM2 may process signals digitally and do so at high data rates. One potential result of high-speed signal processing is that temperature rise of components used in the DM2 may approach or exceed reliability limits.

In addition, signal processing apparatus may have various modes of operation. For example, a color television receiver may be completely disconnected from a power source (power plug disconnected), the receiver may have a "standby" mode of operation (connected to a power source and capable of receiving and processing remote control commands (such as an "on" command) but not operational for producing audio or video output signals), and an "on" or "run" mode of operation (system is fully operational). During certain modes of operation, e.g., "standby" mode, certain system components may be disabled, e.g., to reduce power consumption and noise. In particular, components such as a cooling fan intended to minimize excessive temperature rise of components may be disabled. As a result, component heating in a module such as the DM2 may be exacerbated during a mode of operation such as "standby" mode.

A system described herein solves the described problem by reducing or turning off power supplied to the tuner, e.g., "main" power supply, during one or more modes of operation of the system, e.g., a "standby" mode of operation, thereby reducing heat generation and extending the overall life of the product. As a specific example, by disconnecting the main power supplies to the tuner, internal self-heating of the tuner and subsequent heating of the DM2 module is reduced during the standby mode.

An exemplary embodiment of the described system is shown in the Figure. In the Figure, in order to turn 'OFF the main power supplies to the tuner, a control signal (TUN1_CNTL) is provided. The state of this control signal is determined by the main CPU, which has sufficient information from various inputs (e.g., a "power off" signal received from a remote control not shown in the Figure) to know when the module should be put into standby. To reduce unnecessary heat generation in the standby mode, two FET transistor switches are used to disconnect the +5V and +12V supplies from the tuner. The control signal goes high in the standby mode and turns 'ON a NPN transistor (Q24308), this transistor then causes a PNP transistor (Q24307) to turn 'ON. When the PNP transistor turns 'ON, it applies the correct gate bias voltage to the FET transistors (U24304) for them to turn 'ON and have low resistance. Low cost N-channel FET transistors can be used because of the availability of the +33V supply to the tuner. Through a resistive divider network (R24339, R24337 and R24335), the appropriate drive voltages to the two different FET transistor switches can be set-up. By the use of this divider network, the voltage applied to each of the gates is correct for the power supply to be switched and not overdrive the gate to source voltage. By the use of these two FET transistor switches, 96 % of the tuner power dissipated is removed in the standby mode. FET switches are used over bipolar switches in order to minimize the amount of power required to turn the tuner 'ON or 'OFF.

Another embodiment of the described system involves a device, such as a color television receiver or video signal processing apparatus, that includes capability for simultaneously processing both first and second video signals and for processing auxiliary information. As an example, some video signal processing systems receive and process a first video signal to produce a first output signal representing a first, or "main", image and receive and process a second video signal to produce a second output signal representing a second or auxiliary image. The first and second output signals may be coupled to a display device to produce a displayed image including both the main image and the auxiliary image. A specific example of such systems is a picture-in-picture (PIP) or picture-outside-picture (POP) television system. Such systems may, for example, include

first and second tuners for simultaneously and independently selecting the respective first and second video signals that will be processed to produce the respective first and second image-representative output signals. In such systems, e.g., a color television receiver with PIP capability, it may also be desirable to provide for receiving and processing auxiliary information. For example, in addition to receiving video and audio signals associated with television programming, it may also be desirable to receive auxiliary information such as Gemstar data, that can be processed to produce an on-screen-display (OSD) such as an electronic program guide (EPG) to simplify and facilitate user interaction with the television receiver. In such systems, it may be desirable to include an additional circuit similar or identical to that described above and shown in the Figure to control the second tuner, e.g., PIP-image signal tuner. In addition to providing a picture in picture display on the TV screen, in a system such as the ATC-311 produced by Thomson, the PIP tuner, when the TV is in standby mode, may be used for Gemstar data collection. To receive and process auxiliary information such as Gemstar data, the tuner must receive power and be operational so that the channel or signal carrying the data can be selected and provided to the signal processing circuitry. To provide the capability to receive and process auxiliary information while also solving the above-described component heating problem, the system provides for turning a tuner on for a particular time period during standby mode, i.e., an interval or portion of the standby period, during which the auxiliary information can be collected and processed. For example, a control device such as a microprocessor included in the system responds to activation of a particular mode of operation such as standby mode by activating a process for controlling power to the tuner. The process includes turning the tuner, e.g., the PIP tune, on for a particular amount of time to collect data and then turn the PIP tuner off (e.g., the duty cycle may be around 30%). The time period or frequency of the power-on data-collection intervals may be varied in response to various factors. For example, the tuner on-time may be varied in response to component temperature (on for longer periods as long as temperature is within acceptable limits). Tuner on-time might also be varied in response to the amount of data to be collected or the data rate, i.e., increase on-time if more data must be received and processed or if a slower data rate requires more processing time, as long as component temperatures are acceptable.

Pu020491

